

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FI2004/000679

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C07K14/465 C07K14/36 C12N15/62 C12N5/10		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 C07K C12N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal, BIOSIS, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 492 492 B1 (STAYTON PATRICK S) 10 December 2002 (2002-12-10) cited in the application the whole document -----	1-4, 15, 16, 22-25
X	CHU V. ET AL: "Thermodynamic and structural consequences of flexible loop deletion by circular permutation in the streptavidin-biotin system" PROTEIN SCIENCE, vol. 7, no. 4, April 1998 (1998-04), pages 848-859, XP002316238 ISSN: 0961-8368 cited in the application the whole document -----	1-4, 15, 16, 22-25
		-/-
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		<input checked="" type="checkbox"/> Patent family members are listed in annex.
* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the International filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the International filing date but later than the priority date claimed		
Date of the actual completion of the International search 3 February 2005		Date of mailing of the International search report 21/02/2005
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel: (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016		Authorized officer Kools, P

INTERNATIONAL SEARCH REPORT

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PCT/FI2004/000679

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>LAITINEN OLLI H ET AL: "Rational design of an active avidin monomer." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 278, no. 6, 7 February 2003 (2003-02-07), pages 4010-4014, XP002316239 ISSN: 0021-9258 the whole document</p>	9-11
A	<p>NORDLUND H R ET AL: "Enhancing the thermal stability of avidin" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 278, no. 4, 24 January 2003 (2003-01-24), pages 2479-2483, XP002973647 ISSN: 0021-9258 the whole document</p>	9-11
A	<p>LAITINEN OLLI H ET AL: "Chicken avidin-related proteins show altered biotin-binding and physico-chemical properties as compared with avidin" BIOCHEMICAL JOURNAL, PORTLAND PRESS, LONDON, GB, vol. 363, 2002, pages 609-617, XP002973648 ISSN: 0264-6021 the whole document</p>	1-25
P,X	<p>NORDLUND HENRI R ET AL: "Construction of a dual chain pseudotetrameric chicken avidin by combining two circularly permuted avidins" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 279, no. 35, 27 August 2004 (2004-08-27), pages 36715-36719, XP002316240 ISSN: 0021-9258 the whole document</p>	1-25

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2004/000679

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, 15, 16, 22-25 (all partial)

Circular permuted avidin monomers, isolated polynucleotides encoding said monomers, recombinant vectors comprising said polynucleotides and host cells comprising said vectors. Method of producing the monomers.

2. claims: 1-4, 8-10, 15, 16, 22-25 all partial, and claim 5 complete

Circular permuted avidin monomer being cpAvd5to4, isolated polynucleotides encoding said monomer, recombinant vectors comprising said polynucleotide and host cells comprising said vectors. Method of producing the monomer.

3. claims: 1-4, 8-10, 15, 16, 22-25 all partial, and claim 6 complete

Circular permuted avidin monomer being cpAvd6to5, isolated polynucleotides encoding said monomer, recombinant vectors comprising said polynucleotide and host cells comprising said vectors. Method of producing the monomer.

4. claims: 1-4, 8-10, 15, 16, 22-25 all partial, and claim 7 complete

Circular permuted avidin monomer being cpAvd4to3, isolated polynucleotides encoding said monomer, recombinant vectors comprising said polynucleotide and host cells comprising said vectors. Method of producing the monomer.

5. claims: 11-14, 17-21 all completely, claims 22-25 all partially

Dual chain avidins being a fusion of two avidin monomers chosen from cpAvd5to4, cpAvd6to5, or cpAvd4to3, or the mutants thereof. Combinations of two double chain avidins fused into one single chain avidin. Isolated polynucleotides encoding said polypeptide, recombinant vectors comprising said polynucleotide and host cells comprising said vectors. Method of producing the polypeptides.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/FI2004/000679

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
US 6492492	B1	10-12-2002	AU 3380099 A CA 2324205 A1 EP 1066322 A1 JP 2002510707 T WO 9951632 A1	25-10-1999 14-10-1999 10-01-2001 09-04-2002 14-10-1999